C-A Unreviewed Safety Issue (USI) Form

Title of USI: Addition of RHIC 80K Cooler

Description of USI (use attachments if necessary):
RHIC 80K Cooler Description, 1/11/04, attached.

Title and Date of Relevant SAD: RHIC SAD, 12/30/99

Committee Chair or ESHQ Division Head must initial all items. Leave no blanks:

ITEM	APPLIES	DOES NOT APPLY
Decision to not revise the current SAD and/or ASE at this time:	RLL	
The hazard associated with the proposed work or event is covered within an existing SAD and/or ASE.	RLL	
SAD Title and Date: RHIC SAD 12/30/99.		
This Form and attachments, if necessary, shall be used to document the USI until the next revision of the appropriate SAD.	RLL	
Decision to submit a revised SAD and/or ASE to the BNL ESH Committee:		RLL
The hazard associated with the proposed work is not appropriately included in an SAD.		RLL

Roy Kawl — Signature of C-A Committee Chair or C-A ESHQ Division Head
1-11-04 — Date

Edward T Lessard — Signature of C-A Associate Chair for ESHQ
1-12-04 — Date

RHIC 80K Cooler Description (1/11/04)

The cooler is designed to maintain the RHIC magnet circuit at ~80K when the main RHIC helium refrigerator is off. This reduces the mechanical cycling associated with large temperature changes between the operating temperature of ~4.5K and room temperature. The cooler circulates cold helium gas through the RHIC heat shields and magnets. The helium is cooled by heat exchange with boiling liquid nitrogen (LN_2). The cooler will also be able to allow isolation of a RHIC sextant for warm-up, repair and subsequent cool down. The entire cooler is installed outside Building 1006B to the north of the LHe and LN_2 liquid storage tanks.

This system is not continuously manned with a Cryogenic Operator. , When the 80K is operating, the CAS Watch monitors the cooler operation during off-hours.

The 80K cooler cryostat is designed and tested according to ASME Code requirements. It was pressure tested by the manufacturer.

The cooler piping connects to the valve boxes in Building 1006B and flows through the normal cooling lines for the RHIC magnet circuit. The normal RHIC ODH system is adequate for 80K Cooler operation. Although the RHIC ring does not require the ODH system to be operable when the helium temperature is >50K, the system is maintained operable in the Service/Support Buildings and the Collider Tunnel during 80K cooler operations. Work planning may allow portions of the system to be out of service during 80K cooler operations after adequate hazard reviews and controls are in place.

All electrical design and installation satisfies appropriate electrical codes, including grounding. The system is powered with 480VAC and includes a local MCC and 480VAC/230VAC transformer.

There is 50 gallons of propylene glycol inside the unit's fan housing which contains the three helium-circulating pumps. Propylene glycol is used because of the reduced potential environmental impact from an accidental glycol spill. Although not required because of the small volume, a secondary containment is provided for the glycol. The Cryostat ladders and walkways are OSHA compliant.

The 80K cooler can be controlled, via secure computer, from the Cryogenics Control Room in Building 1005 or alternatively from Building 1006B. Valve controls are powered by a UPS upon loss of normal electrical power, similar to the existing main refrigerator.